3.0 ALTERNATIVES AND CUMULATIVE PROJECTS

3.1 FACTORS USED IN SELECTION OF ALTERNATIVES

3.1.1 Alternatives Development and Screening Process

One of the most important aspects of the environmental review process is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a proposed project. In addition to mandating consideration of the No Project Alternative, the State California Environmental Quality Act (CEQA) Guidelines (section 15126.6[d]) emphasize the selection of a range of reasonable alternatives and an adequate assessment of these alternatives to allow for comparative analyses by decision-makers.

The CEQA requires consideration of a range of reasonable alternatives to a project or project location that: (1) could feasibly attain most of the basic project objectives; and (2) would avoid or substantially lessen significant impacts of the proposed project. An alternative cannot be eliminated simply because it is more costly or if it could impede the attainment of all project objectives to some degree. However, the State CEQA Guidelines declare that an Environmental Impact Report (EIR) need not consider an alternative that has effects that cannot be reasonably ascertained or where implementation is remote or speculative. The CEQA requires that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with a proposed project.

This screening analysis does not focus on relative economic factors of the alternatives (as long as they are feasible) since the State CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of Project objectives or would be more costly." Likewise, the question of market demand or Project need is not considered.

3.1.2 Alternatives Screening Methodology

Alternatives to the proposed Project were selected based on information provided by Venoco, as well as input received from the EIR study team, the public, and local jurisdictions during the EIR Scoping Hearings. The alternatives screening process consisted of three steps:

Step 1: Define the alternatives to allow comparative evaluation.

Step 2: Evaluate each alternative in the context of one of more of the following criteria:

- The extent to which the alternative would accomplish most of the basic goals and objectives of the Project;
- The extent to which the alternative would avoid or lessen one or more of the identified significant environmental effects of the Project;
- The potential feasibility of the alternative, taking into account site suitability, economic viability, availability of infrastructure, General Plan consistency, and consistency with other applicable plans and regulatory limitations; and
- The requirement of the CEQA Guidelines to consider a "no project" alternative and to identify, under specific criteria, an "environmentally superior" alternative in addition to the "no project" alternative (State CEQA Guidelines, section 15126.6[e]).

Step 3: Determine suitability of the proposed alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it from further consideration, with appropriate justification.

Feasible alternatives that did not clearly offer the potential to reduce significant environmental impacts and infeasible alternatives were removed from further analysis. In the final phase of the screening analysis, the environmental advantages and disadvantages of the remaining alternatives were carefully weighed with respect to their potential for overall environmental advantage, technical feasibility, and consistency with Project and public objectives.

If selection and implementation of an alternative clearly would not provide any environmental advantages when compared to the proposed Project, it was eliminated from further consideration. At the screening stage, it is not possible to quantitatively evaluate potential impacts of the alternatives or the proposed Project with certainty. However, it is possible to identify elements of the proposed Project that are likely to be the sources of impact. A preliminary assessment of potential significant effects of the proposed PRC Lease 421 Recommissioning Project resulted in identification of the following impacts:

- Potential increase in air pollutant emissions (Air Quality);
- Potential increase in nuisance odor complaints associated with incremental increases in the number of annual barge loading and ongoing operations of Ellwood Marine Terminal (EMT) (Air Quality);

- Potential increase in the risk of an oil spill from surf zone oil production and transportation that would affect marine water quality, marine resources and commercial and recreational fishing (Water Resources, Biological Resources);
- Potential safety hazards associated with incremental increases in oil production and transportation (Public Services, Safety);
- Potential land use impacts and policy conflicts associated with surf zone oil production (Land Use);
- Potential increase in the risk of an oil spill from surf zone oil production and transportation that would affect terrestrial biological resources (Biological Resources); and
- Potential increase in the risk of an oil spill from surf zone production and transportation that would affect recreation (other than fishing) in the vicinity of the proposed Project (Recreational Resources).

For the screening analysis, technical and regulatory feasibility of various potential alternatives was assessed at a general level; specific analyses were not conducted. Any alternative with infeasible characteristics was disregarded. The assessment of feasibility was conducted by utilizing "reverse reason" to identify anything about the alternative that would be infeasible on technical or regulatory grounds. The CEQA does not require elimination of a potential alternative based on cost of construction and operation/maintenance. For the proposed Project, characteristics used to eliminate alternatives from further consideration included:

- Engineering feasibility and safety;
- Potential adverse affects on marine and terrestrial resources;
- Potential effects on public health and safety;
- Potential for inconsistency with adopted agency plans and policies; and
- Reasonability when compared to other alternatives under consideration.

3.1.3 Summary of Screening Results

Potential alternatives were evaluated using the above criteria. A number of alternatives were eliminated based on safety concerns. Those alternatives that were found to be technically feasible and consistent with Venoco's objectives were reviewed to determine if the alternative had the potential to reduce environmental impacts of the proposed Project.

Table 3-1 summarizes the evaluation of potential alternatives to be addressed in the EIR. Those listed in the first column have been eliminated from further consideration (see rationale in Section 3.2), and those in the second column are evaluated in detail in Section 4 of this EIR and are further described in Section 3.3.

Table 3-1. Summary of Alternatives Screening Results

Alternatives Eliminated from Consideration	Alternatives Evaluated in this EIR
• Drilling from the Ellwood Onshore Facility (EOF) • Drilling from Platform Holly • Compressed Production Schedule	• No Project Alternative • No Project Alternative with Pressure Testing • Onshore Oil Processing at the EOF Alternative • Recommissioning Using Historic Production Methods Alternative • Re-injection at Platform Holly Alternative • Transportation Sub-Alternative Options

3.2 ALTERNATIVES ELIMINATED FROM FULL EVALUATION

3.2.1 Drilling from the EOF

Under the Drilling from the EOF Alternative, Venoco would produce the Ellwood Field by installing a drilling rig at the EOF. The surf zone wells would be shut-in, and existing infrastructure at PRC 421 would be subsequently decommissioned with its components abandoned in place, removed, or a combination thereof. No production would take place at PRC 421 from surf zone facilities as they were at the time the NOP was published and as they currently are.

This alternative would reduce construction- and operation-related impacts to marine resources, aesthetics, and the risk of a marine oil spill would be greatly reduced. Abandonment-related impacts, such as grading, excavation, and export and cleanup of existing facilities and contaminated soils would be similar to those associated with the proposed Project; however, such activities are anticipated to occur much sooner than those associated with the proposed Project.

A drilling rig and associated equipment required to support the anticipated drilling activities would typically require an area measuring 100 feet by 200 feet, or about one half acre. This amount of space is not available on Venoco's EOF property site. The entire site is approximately 4.5 acres with equipment distributed around the entire site. As a result of the space restrictions, the Drilling from the EOF Alternative was eliminated from further evaluation.

3.2.2 Drilling from Platform Holly

Under this alternative, the Ellwood Field would be produced from Platform Holly, instead of utilizing shoreline wells, and PRC 421 would be immediately abandoned and existing infrastructure would be left in place, removed, or a combination thereof. Decommissioning would take place according to lease requirements and would be governed by an Abandonment and Restoration Plan, to be written and submitted to the CSLC and the city of Goleta. Specifics on decommissioning and hazardous materials investigations, including a Phase I Environmental Site Assessment and likely Phase II testing, would be addressed in the Abandonment and Restoration Plan and would require applicable environmental documentation such as a Negative Declaration or EIR.

This alternative would reduce or eliminate many of the impacts associated with the proposed Project related to accidental oil spills from the PRC 421 location and impacts to the marine and terrestrial environment. Abandonment-related impacts, such as grading, excavation, export and cleanup of existing facilities and contaminated soils, would be similar to the proposed Project but would occur much sooner than those associated with the proposed Project.

This alternative was eliminated from further consideration because it is technically infeasible and could increase the risk of an offshore oil spill. In order to produce the Ellwood Field, a well would need to be drilled to a vertical depth of 3,000 feet with a 12,600 foot horizontal displacement. This scenario is approaching the limits of current drilling technology and additional geologic concerns are present that make it infeasible to drill from Platform Holly. Specifically, the well would cross a long section of the Sisquoc and Rincon formations and a very large thrust fault. Therefore, the well would be susceptible to loss of circulation, structural instability, and loss of directional control. This loss of directional control combined with the relatively small target and the distance to the well render this option technically infeasible. Finally, many of the original wells drilled on the PRC 421 lease were done without accurate deviation surveys, meaning that the exact location of those well bores is unknown, and that new wells could hit one of the old wells. As a result, the Drilling from Platform Holly Alternative was removed from consideration due to the increased risk for oil spills and the technical difficulties associated with producing from such a distance and at such a depth.

3.2.3 Condensed Production Schedule

Under this alternative, an additional well would be drilled into the Ellwood Field with the intent to accelerate production and to shorten the Project's life. This would potentially

reduce the long-term risk of oil spills and associated impacts to water, land use, aesthetics, safety, and terrestrial and marine biological resources.

While compressing the production life might reduce the long-term risk from an oil spill, adding a well to the shore zone facilities may not necessarily accelerate production and lessen the life of the Project as intended. In addition, the actions needed to drill an additional shore zone well may have more significant short-term impacts to water quality, marine and terrestrial biological resources, air quality, geologic resources, hazardous materials, noise, and aesthetic resources. Therefore, this alternative was eliminated from further consideration.

3.3 ALTERNATIVES EVALUATED IN THE EIR

3.3.1 No Project Alternative

Description

Under the No Project Alternative, the PRC 421 wells would remain shut-in and no production would take place at PRC 421 from the surf zone facilities as they were at the time the NOP was published and as they currently are.

This alternative would avoid the impacts of Project start-up and operation, including construction-related impacts to marine resources, water quality, short-term noise, and aesthetics. Long-term impacts including incremental increases in the potential for oil spills from offshore oil processing and impacts from increased transport on the marine and terrestrial resources and adjacent land use impacts would be avoided.

A subsequent consequence of this alternative would be future decommissioning in accordance to lease requirements, including Piers 421-1 and 421-2, the access road and seawall, and pipelines. Specifics on decommissioning would be addressed in the Abandonment and Restoration Plan to be written and submitted to the CSLC and the city of Goleta and would require applicable environmental documentation such as a Mitigated Negative Declaration or an EIR.

In 2001, the wells associated with PRC 421 were relieved during depressurization activities, and the results of the activities indicated that the reservoir had been repressurized. CSLC staff expressed concern over the apparent build-up of pressure within the reservoir since it was shut-in in 1994. CSLC indicated that the pressure build-up could potentially cause oil releases into the coastal environment as the increased pressure could place pressure on historic abandoned wells in offshore areas of the reservoir. Many of these offshore wells were abandoned in the 1940s and 1950s using

abandonment and well-capping techniques of that period that are not adequate by current standards. The structural stability of such older abandoned facilities is known to be unreliable and a substantial increase in reservoir pressure could cause a release of oil to the coastal environment. This alternative would identify the potential impacts if the proposed Project is not implemented, including assessing whether there are any potential effects to the coastal environments as a possible result of repressurization.

Required Agency Approvals

- CSLC;
- California Coastal Commission (CCC);
- California Department of Fish and Game (CDFG);
- Santa Barbara County Air Pollution Control District (APCD); and
- City of Goleta.

3.3.2 No Project Alternative with Pressure Testing

Description

The No Project Alternative with Pressure Testing would determine if abandoning PRC 421 and foregoing resumption of production would increase the potential for accidental, indirect releases of oil into the environment from other abandoned surf zone and/or offshore wells in the vicinity caused by increased pressure in the reservoir into which such wells were drilled. This alternative would require the installation of temporary facilities and equipment at PRC 421 to allow for temporary oil production and pressure testing of the existing 421-2 well and the Vaqueros Reservoir. Pressure testing would continue for a period of 6 to 12 months to determine the potential of possible pressure increases in the reservoir. After testing is completed, recommendations would be provided on the ultimate disposition of the surf zone facilities.

Upon initial closure of PRC 421 in 1994, pressure at the wellhead increased. This increase in pressure raised concerns with CSLC staff as to whether a No Project Alternative (permanent shut-in/abandonment) would increase the potential for pressure increases in the reservoir that could result in releases from historic abandoned wells associated with the same geologic formation. The flow pressure testing would be designed to assess the relationship between PRC 421 production and pressure in the reservoir.

Implementation of this alternative would require installation of the following improvements and equipment:

- Removal of the existing well cap and installation of a portable gas-fired or diesel-generator-powered pump at Pier 421-2;
- Installation of required temporary flow meters and monitoring equipment on Well 421-2;
- Installation of one 2-inch flowline linking Pier 421-2 to the EOF; and
- Processing and separation of a maximum of 700 barrels of oil per day (BOPD) and 120 barrels of water per day (BWPD) at the EOF for the duration of the pressure testing period.

This alternative would identify potential impacts associated with the amount of production necessary to conduct pressure testing over a 6- to 12-month period. This alternative would require the development of a pressure-testing plan that would provide recommendations of the ultimate disposition of PRC 421. If the CSLC were to deny the proposed Project and choose this alternative, pressure testing would be implemented and a subsequent decision regarding the disposition of Project facilities would be required based on the results of the testing.

Full decommissioning of Project facilities as stipulated in the lease requirements, including Piers 421-1 and 421-2, the access road, seawall, and pipelines would occur in the future after a determination by the CSLC regarding this alternative. The future decommissioning of the remaining facilities at PRC 421 would be governed by an Abandonment and Restoration Plan to be written and submitted to the CSLC and the city of Goleta.

<u>Required Agency Approvals</u>

- CSLC;
- CCC;
- CDFG;
- Santa Barbara County APCD;
- City of Goleta;
- Santa Barbara County.

3.3.3 Onshore Oil Processing at EOF

Description

Under this Alternative, oil produced from PRC 421 would be processed at the EOF instead of at Pier 421-2. The EOF is already equipped with the oil-water separation, treatment, and discharge of produced water systems necessary to treat oil produced from Pier 421-2. Oil would be sent to the EMT via Line 96, and separated water would be discharged into the well that the EOF currently uses for disposal of Platform Holly's produced water (WD-1). Although existing EOF throughput levels would increase, no substantial physical modifications of existing systems at the EOF would be necessary beyond the control system improvements envisioned by the proposed Project. The increased throughput levels are projected to remain below the operating level currently allowed under Permit 07904 from the Santa Barbara County APCD.

Increased throughput levels at the EOF would be subject to review for consistency with policies of the Goleta General Plan and zoning ordinances. The EOF is currently a legally non-conforming use and, as such, Project approval would require specific findings as to whether increasing throughput at the EOF could be found consistent with the provisions governing legal non-conforming uses contained in the city of Goleta's Coastal Zoning Ordinance. In the event that findings for a Limited Exception Determination (LED) could not be made, implementation of this alternative may require submittal of an application to the city of Goleta for a rezone and General Plan amendments for the site. This Alternative would require installation of many of the same supporting infrastructure improvements and associated construction-related activities as the proposed Project. Major components would include:

- Repairs to the caisson of Pier 421-2, comparable to those already completed at Pier 421-1;
- Installation and operation of a new downhole electric submersible pump (ESP) at Pier 421-2;
- Installation and operation of a single new 2-inch flowline and upgrades to the existing 6-inch pipeline to convey oil and water emulsion to the EOF for separation;
- Installation and operation of buried power cables to Pier 421-2 to operate the well and associated control systems;
- Installation and operation of a communication system between Well 421-2 and the EOF and associated minor improvements in the EOF control room;

- Reactivation of the oil well at Pier 421-2, with projected initial production of 700 BOPD of crude oil, decreasing to approximately 100 BOPD in its final year of production (estimated to be 12 years after start-up), as indicated in Section 2.4.3, Volumes and Throughput; and

- Supporting construction activities including use of a drilling rig for submersible pump installation and cranes and associated heavy equipment for caisson repairs, flowline pulling, and trenching for power cable installation.

Given that separation and discharge of produced water would occur at the EOF, no processing or separation equipment would be installed at Pier 421-2. Processed water would initially be disposed of at the EOF and subsequently at Platform Holly. Therefore, under this Alternative, Pier 421-1 would not be required for water re-injection and the decommissioning of Pier 421-1 would be accelerated. The accelerated decommissioning would require submittal of a decommissioning plan for Pier 421-1 to the CSLC and the city of Goleta within approximately 6 months of approval of this Alternative. The decommissioning plan would be subject to further environmental review.

Full decommissioning of remaining facilities, including Pier 421-2, the access road and seawall, pipelines, and power cables, would occur after production ceases. This future decommissioning of the remaining facilities at PRC 421 would be governed by an Abandonment and Restoration Plan to be written and submitted to the CSLC and the city of Goleta.

Required Agency Approvals

- CSLC;
- CCC;
- CDFG;
- US Army Corps of Engineers (USACE);
- Regional Water Quality Control Board (RWQCB);
- Santa Barbara County APCD; and
- City of Goleta.

3.3.4 Recommissioning Using Historic Production Methods

Description

Under this Alternative, production would resume at PRC 421 essentially in its historic configuration at the time prior to the wells being shut-in in 1994 while incorporating new technologies to ensure compliance with current industrial and environmental standards.

Historic operations at this facility involved utilizing a gas-fired internal combustion engine to power the pump at Pier 421-2. Produced oil and water emulsion was then separated using a free-water knockout system and produced oil bypassed the EOF and was delivered to market directly via the existing 6-inch line to Line 96 for delivery to the EMT. Produced water was stored in a tank on Pier 421-1 and periodically re-injected into the underlying formation via the well on Pier 421-1.

This alternative would employ the general historic facility configuration and equipment types described above while incorporating technologies to comply with current industrial and environmental standards. The following improvements would likely be required under this alternative:

- Repairs to the caisson of Pier 421-2, comparable to those already completed at Pier 421-1;
- Installation and operation of a new gas-fired internal combustion engine and an above-ground pump in Pier 421-2;
- Installation and operation of a new double-walled flowline between Pier 421-2 to Pier 421-1;
- Installation of a new 2-inch flowline within the existing 6-inch pipeline from Pier 421-1 to Line 96 for delivery of crude oil to the EMT;
- Upgrade and repair to the existing 6-inch pipeline as proposed for the Project to provide an added layer of spill protection for the new flowline conveying oil under this Alternative;
- Installation of a free-water knockout vessel, storage tank and pump for water re-injection on Pier 421-1;
- Installation and operation of a buried power cable to Pier 421-2 to operate well monitoring and control systems;
- Installation and operation of a communication system between Pier 421-2 and the EOF and associated minor improvements to the EOF control room;

- Reactivation of the oil well at Pier 421-2, with projected initial production of 700 BOPD of crude oil, decreasing to approximately 100 BOPD in its final year of production (estimated to be 12 years after start-up), as indicated in Section 2.4.3, Volumes and Throughput; and

- Supporting construction activities including use of a drilling rig for submersible pump installation, cranes and associated heavy equipment for caisson repairs, flowline pulling, and trenching for power cable installation.

Full decommissioning of Project facilities, including Piers 421-1 and 421-2, the access road and seawall, pipelines, and power cables would occur in the future, after production ceases. This future decommissioning of the remaining facilities at PRC 421 would be governed by an Abandonment and Restoration Plan to be written and submitted to the CSLC and the city of Goleta.

Required Agency Approvals

- CSLC;
- CCC;
- CDFG
- RWQCB
- USACE
- Santa Barbara County APCD; and
- City of Goleta.

3.3.5 Re-injection at Platform Holly

Description

Under this Alternative, production would resume at PRC 421 as described under the proposed Project; however, produced water and gas would be sent to Platform Holly, via the EOF, for re-injection, and Well 421-1 would be decommissioned under an accelerated schedule.

A 4-inch pipeline currently extends from the EOF to Platform Holly. This pipeline is currently utilized to ship clean natural gas to power generators and other equipment on Platform Holly. Under this Alternative, this pipeline would instead be utilized to ship water for disposal at platform Holly. Presuming use of the existing line, this Alternative would require that Venoco utilize gas produced at Platform Holly to power equipment.

Because this gas has a higher sulfur content than the gas currently used at the platform, new equipment (hydrogen sulfide [H_2S] scrubbers) and operational changes would be required at Platform Holly. Alternatively, as part of the Ellwood Oil Development Pipeline Project (Full Field Development), Venoco is currently studying installation of an additional line from the EOF to Platform Holly. This line could serve the platform's energy or water disposal needs.

This Alternative would entail installing a flow line that extends from Well 421-2 to the EOF and decommissioning Well 421-1, its caisson, and pier under an accelerated schedule. This 2-inch flowline would be installed within the 6-inch pipeline along with the 2-inch oil flowline. The following improvements would likely be required under this alternative:

- Repairs to the caisson of Pier 421-2, comparable to those already completed at Pier 421-1;
- Installation and operation of a new downhole ESP at Pier 421-2;
- Installation and operation of two new 2-inch flowlines, one to transfer oil to Line 96 and one to transfer produced water and gas to the 4-inch utility line for re-injection at Platform Holly;
- Upgrades to the existing 6-inch pipeline;
- Installation and operation of buried power cables to Pier 421-2 to operate the well and associated control systems;
- Installation and operation of a communication system between Well 421-2 and the EOF;
- Reactivation of the oil well at Pier 421-2, with projected initial production of 700 BOPD of crude oil, decreasing to approximately 100 BOPD in its final year of production (estimated to be 12 years after start-up), as indicated in Section 2.4.3, Volumes and Throughput; and
- Supporting construction activities including use of a drilling rig for submersible pump installation and cranes and associated heavy equipment for caisson repairs, flowline pulling, and trenching for power cable installation.

Under this Alternative, Pier 421-1 would not be required for water re-injection and the decommissioning of Pier 421-1 would be accelerated. The accelerated decommissioning would require submittal of a decommissioning plan for Pier 421-1 to the CSLC and the city of Goleta within approximately 6 months of approval of this

Alternative. The decommissioning plan would be subject to further environmental review.

Full decommissioning of remaining Project facilities including Pier 421-2, the access road and seawall, pipelines, and power cables would occur in the future, after production ceases. This future decommissioning of the remaining facilities at PRC 421 would be governed by an Abandonment and Restoration Plan to be written and submitted to the CSLC and the city of Goleta.

Required Agency Approvals

- CSLC;
- CCC;
- CDFG;
- RWQCB;
- USACE;
- Santa Barbara County APCD; and
- City of Goleta.

3.3.6 Transportation Sub-Alternative Options

The Transportation Sub-Alternative Options are two transportation options that would apply to the proposed Project and all of the Alternatives described Section 3.3 above. Under the sub-alternative options, oil would not be sent to barge Jovalan for delivery to refineries. Instead, oil would either be transported to the All American Pipeline (AAPL) system at Las Flores Canyon by a newly constructed pipeline or oil would be transported via truck to the Rincon Onshore Oil Separation Facility (ROSF), located east of Carpinteria. A pipeline, which would serve as an alternative oil transportation means, is currently proposed as part of Venoco's Full Field Development project which is currently under review by CSLC. A draft EIR on this project may be available for public review in 2007, with the potential for the pipeline to become operational as early as 2009-2010. Alternately, such a pipeline could be considered for construction, absent any lease expansions, to serve only existing or expanded production from Platform Holly as well as that from the recommissioning of PRC 421.

Pipeline Sub-Alternative

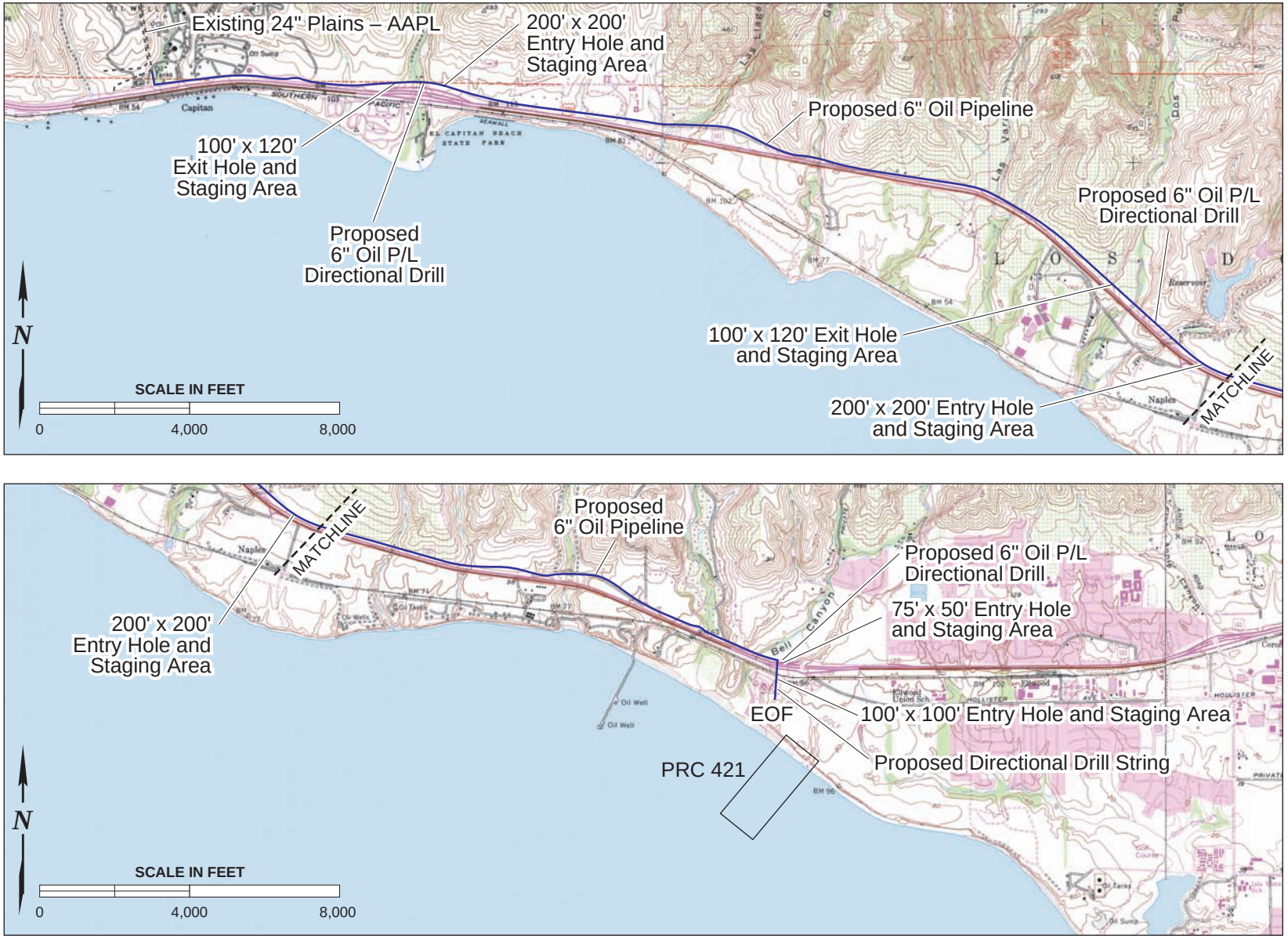
Under this sub-alternative option, production would resume at PRC 421 as described in the proposed Project; however, recovered crude oil would be transported via a newly constructed pipeline that would extend between the EOF and the AAPL in Las Flores Canyon. Because PRC 421 would be commingled with production oil from the South Ellwood Field via the EOF at the point of tie-in, the pipeline would need to be sized for both PRC 421 and Platform Holly production.

The Pipeline Sub-Alternative would use the same pipeline as analyzed in the EMT Draft EIR and currently proposed as part of the Full Field Development project, which is an onshore 6-inch diameter, crude oil pipeline from the EOF to the AAPL at Las Flores Canyon (Figure 3-1). The pipeline would cross under U.S. Highway 101 on the north side of the EOF and run parallel to the north side of the highway for approximately 8.5 miles to Las Flores Canyon. At Las Flores Canyon the pipeline would extend a short distance up the canyon to the AAPL pump station located at the ExxonMobil Santa Ynez Unit (SYU) oil and gas processing facility. At that point, the pipeline would tie-in directly to the AAPL. The pipeline would be monitored and operated from the EOF, which would provide for continuous monitoring 24 hours per day. No additional positions to the existing staff would be required as a result of this transportation option. A more detailed description of pipeline construction and operation is provided in Appendix G.

The EMT tanks and equipment would not be utilized for this option. The EMT and Line 96 would be abandoned (see the EMT EIR). Existing tanks at the EOF would be utilized to buffer crude oil flows. Three tanks (the two existing crude oil tanks and the oily water tank), with a total capacity of 6,000 barrels, could be available for storage at the EOF.

Required Agency Approvals

- U.S. Department of Transportation, Office of Pipeline Safety;
- USACE;
- U.S. Fish and Wildlife Service (USFWS);
- California State Fire Marshall;
- California Department of Transportation;
- CCC;



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Proposed Pipeline Route

FIGURE 3-1

- CDFG;
- Santa Barbara County;
- Santa Barbara County APCD; and
- City of Goleta.

Venoco would also be required to update their South Ellwood Field Emergency Action Plan.

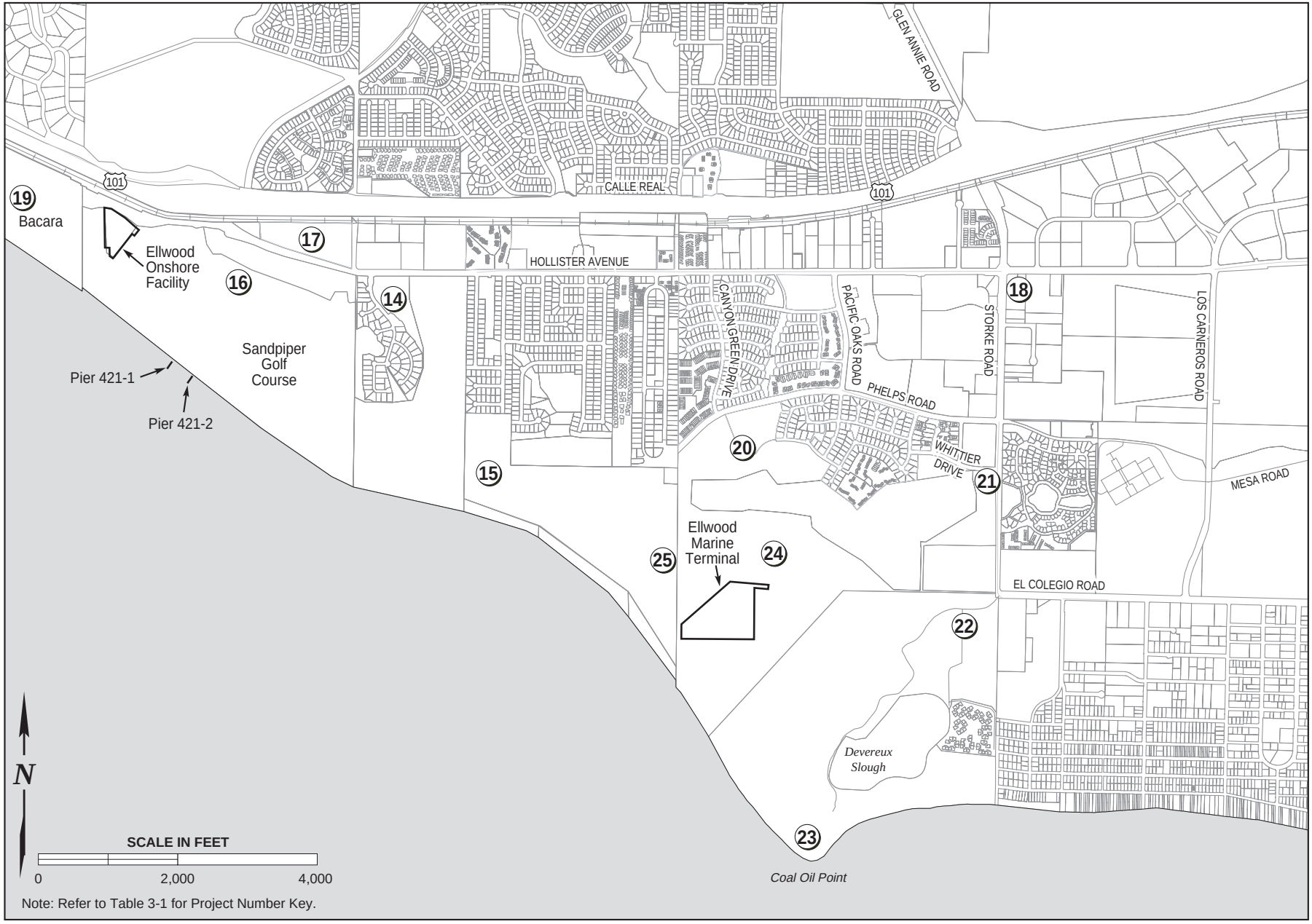
Truck Transportation Sub-Alternative

Under this sub-alternative option, production would resume at PRC 421 as described in the proposed Project and all of the Alternatives described Section 3.3 above; however, recovered crude oil would be transported via tanker trucks on local freeways rather than offshore by barge Jovalan. Oil produced at PRC 421 would be transported to the ROSF, located just east of Carpinteria (Figure 3-2). From the ROSF, the oil would be shipped via an existing 22-inch pipeline to the Shell and Conoco Phillips (TOSCO) terminal in Ventura Harbor. From Ventura, Project-related crude oil would be transported via several existing common carrier pipelines that go to Los Angeles area refineries.

Trucks from the EOF would enter U.S. Highway 101 at the nearby Winchester Avenue onramp and travel east on U.S. Highway 101 for approximately 32 miles to the ROSF. Trucks would exit the highway at Seacliff, and travel a short distance along Highway 1 to the ROSF access road. The total one-way distance traveled by each truck would be approximately 35 miles.

Under this sub-alternative option, an industry-standard truck loading rack would be constructed at the EOF to accommodate the necessary truck loading requirements which would include secondary containment and other features required by State, local, and Federal regulations. An industry standard truck unloading rack including secondary containment and other features required by State, local, and Federal regulations would be required at the ROSF to transfer crude oil from the truck to an existing storage tank at the facility. The crude oil would be commingled with production from the ROSF and transported via existing pipeline to Los Angeles area refineries

Each tandem truck would hold approximately 160 barrels of oil. Table 3-2 provides approximate truck trips to the ROSF for PRC 421 during the forecasted production life.



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Cumulative Projects in the Ellwood Area

FIGURE 3-2

Table 3-2. Approximate Truck Trips from EOF to ROSF by Production Years

PRC 421 Production Year	Average BOPD	Approximate Truck Trips to ROSF (roundtrips/day)
Year 1	680	5
Year 2	578	4
Years 3 - 5	491 - 355	3
Years 6 - 9	302 - 185	2
Years 10 - 12	158 - 114	1

Required Agency Approvals

- Santa Barbara County Fire Department;
- Santa Barbara County APCD;
- City of Goleta;
- City of Carpinteria;
- Carpinteria/Summerland Fire Department;
- California Department of Transportation.

Venoco would also be required to update their South Ellwood Field Emergency Action Plan.

3.4 CUMULATIVE RELATED FUTURE PROJECTS

This discussion provides a listing and map identifying other related future projects near the location of the proposed Project and Alternatives.

Section 15130 of the State CEQA Guidelines requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(c): *With some projects, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis*

As defined in section 15355 of the State CEQA Guidelines: *"Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. (a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related*

past, present, and reasonably foreseeable probably future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

3.4.1 Boundary of Cumulative Projects Study Area

The cumulative projects study area for this Draft EIR has been established as described below. The primary study area covers projects located in the immediate on-shore and near-shore areas of the Ellwood coast. Other projects involving the transportation of oil along the California Coast comprise the secondary areas of study. These projects are located both onshore and offshore in the PRC 421 Project area and include relevant projects in the port areas of Los Angeles and San Francisco Bay.

3.4.2 Description of Cumulative Projects

The cumulative project list includes projects that are either reasonably foreseeable or are expected to be constructed or operated during the life of the proposed Project. This list was compiled from data developed for the following environmental review documents and from consultation with appropriate agencies (CSLC 2006a; CSLC 2006b; city of Goleta 2006):

- Draft EIR, Venoco Ellwood Marine Terminal Lease Renewal Project, prepared by the CSLC;
- Final EIR, Comstock Homes Development and Ellwood Mesa Open Space Plan, prepared by the city of Goleta;
- Final EIR, Ocean Meadows Residences and Open Space Plan, prepared by Santa Barbara County;
- Final EIR, Faculty and Student Housing, Open Space Plan, and Long Range Development Plan Amendment, prepared by the University of California, Santa Barbara (UCSB);
- Revised Draft EIR, Cabrillo Port Liquefied Natural Gas Deepwater Port, Ventura and Los Angeles Counties, California, prepared by the CSLC;
- Draft Environmental Impact Statement (EIS)/EIR, Pacific Energy Crude Oil Marine Terminal and Pipelines Project, prepared by the USACE, Los Angeles District and the Port of Los Angeles;

- Final EIR, Shore Terminal LLC Martinez Marine Terminal 20-Year Lease Consideration, prepared by the CSLC;
- Draft EIS/EIR, Sound Energy Solutions (SES) FERC/Port of Long Beach; and
- Draft EIR, Chevron Long Wharf.

3.4.3 MARINE TRANSPORTATION PROJECTS

There are several marine transportation projects proposed in the vicinity of the Project that may contribute to various cumulative impacts. Proposed projects in close proximity to PRC 421 or that could have impacts on the same resources as the proposed Project are listed in Table 3-3. Figure 3-3 shows the location of these cumulative projects which are summarized below (numbered in accordance with Table 3-3). Please note that the marine transportation projects located in the Los Angeles and San Francisco Bay areas (numbered 8 to 12 in Table 3-3) are not shown on this figure.

1. Cabrillo Port LNG Terminal, BHP Billiton LNG International, Inc.

BHP Billiton LNG International, Inc. proposes to construct and operate an offshore floating storage and regasification unit (FSRU) that would be moored in Federal waters offshore of Ventura County, approximately 47 miles southeast of PRC 421. As proposed, liquefied natural gas (LNG) from the Pacific basin would be delivered by an LNG carrier and offloaded onto the FSRU; regasified; and delivered onshore via two new 22.8-mile, 24-inch diameter natural gas pipelines laid on the ocean floor. These pipelines would come onshore at Ormond Beach near Oxnard, California and tie into the existing Southern California Gas Company pipeline system. A new metering station, including a pig launcher/receiver and odorant station would be built onshore in addition to odorant being added on the FSRU. New pipelines would be built to carry gas from the metering station with two local tie-in segments to the storage facility in Santa Clarita. The facilities would be designed to deliver an average of 800 million cubic feet per day, with a peak throughput capacity of 1,500 million standard cubic feet per day (MMSCFD). This project was recently disapproved by the CSLC and other state entities; its status is unclear.

2. Clearwater Port LNG Terminal, Northern Star Natural Gas

The Clearwater Port LNG project proposes to retrofit Platform Grace, an existing fixed offshore oil and gas facility located in Federal waters 12.6 miles offshore of Ventura County, to receive and regasify LNG for transport to shore. Platform Grace would undergo a series of changes as part of its retrofit into a deepwater port facility. This would be accomplished through installation of platform-based regasification equipment,

Table 3-3. Relevant Cumulative Projects

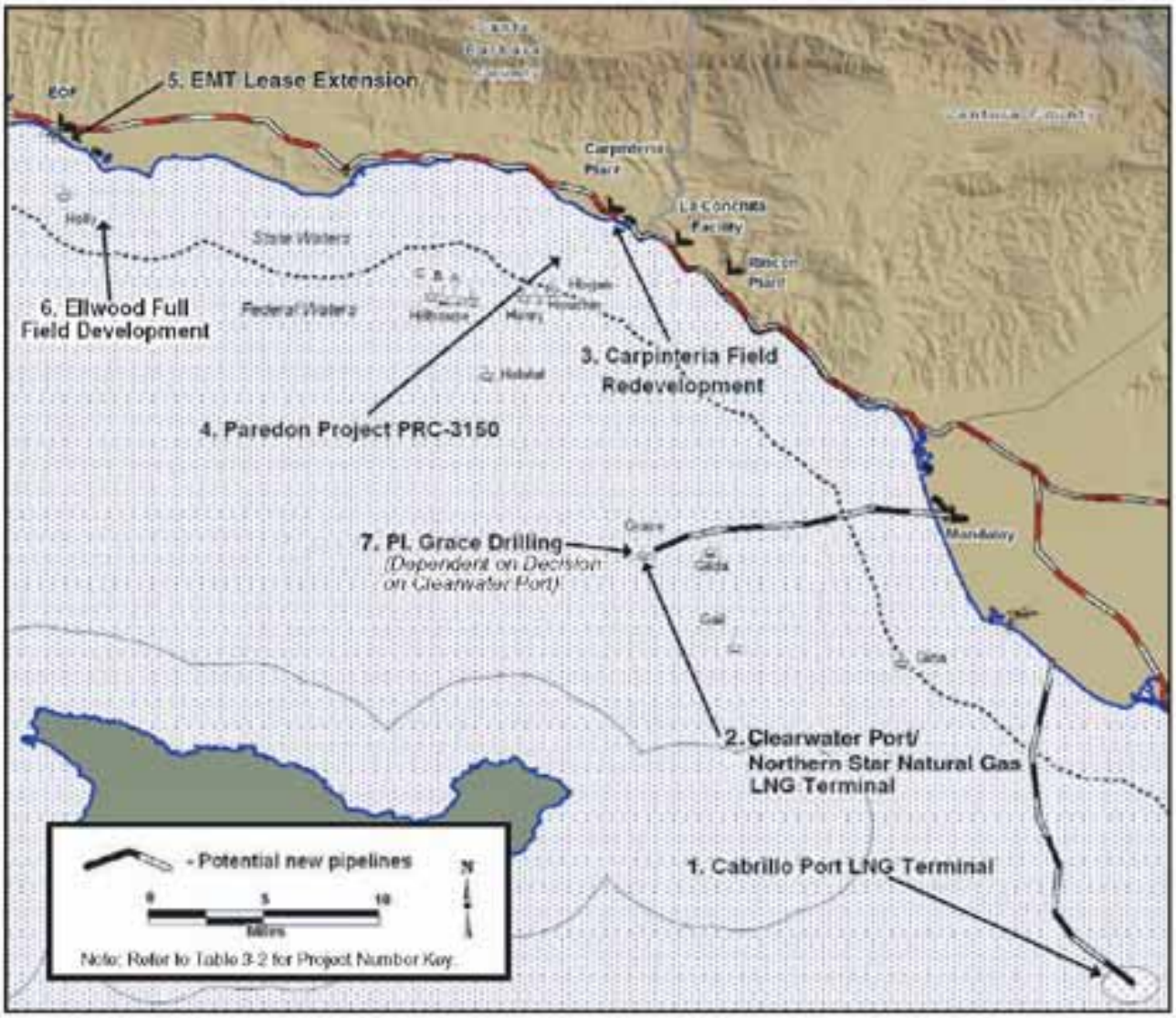
Project Name/Applicant	Description/Status
Industrial/Marine Projects – PRC 421 Project Area/Los Angeles/San Francisco Bay	
1. Cabrillo Port/BHP Billiton LNG International, Inc.	Offshore LNG Terminal/This project was recently disapproved by the CSLC and other state entities; its status is unclear
2. Clearwater Port LNG Terminal at Platform Grace/Northern Star Natural Gas	Offshore LNG Terminal/Pending
3. Carpinteria Field Redevelopment Project/Carone Petroleum Corp. and Pacific Operators Offshore Inc.	Redevelop State Leases PRC-4000, PRC-7911, and PRC-3133/Pending
4. Paredon Project/Venoco	Development of offshore oil and gas reserves from onshore facilities/Draft EIR pending late spring/early summer
5. Ellwood Marine Terminal EIR Lease Extension/Venoco	Consideration of a new State lease to continue operating the offshore improvements associated with the EMT/Proposed
6. Venoco Full Field Development	Adjust PRC 3242.1 boundary, drill up to 40 wells, construct 8.5-mile pipeline, decommission and abandon EMT/ Application complete
7. Platform Grace/Venoco (only if Clearwater Port is not approved)	Resume oil production/Anticipated, pending
8. Marine Terminal Project, Port of Los Angeles/Pacific Energy	Construct a crude oil receiving facility on Pier 400 with tanks on Terminal Island as well as pipelines in the Port of Los Angeles/Pending
9. Channel Deepening Project/Port of Los Angeles	Navigation channel deepening/Approved, construction underway
10. Artificial Reef, San Pedro Breakwater/Port of Los Angeles	Artificial reef development/Approved
11. John F. Baldwin Navigation Channel Project/ PRC 421 Project Area	Navigation channel deepening/Anticipated
12. Development of 36 non-producing Federal leases/various applicants	Various plans to develop Federal leases/Schedule uncertain due to litigation
Residential, Commercial, Institutional, and Recreational Projects — PRC 421 Project and Alternatives Area	
13. Comstock Homes Development, 7800 block of Hollister Ave./Comstock Homes and Development Partners	62-unit single family development/Under construction
14. Ellwood-Devereux Coast Open Space and Habitat Management Plan/UCSB, Santa Barbara County, Goleta	Implementation of Open Space Plan actions, including trail connections, habitat restoration, parking, restroom upgrade, etc./In progress
15. Sandpiper Golf Course Renovations, 7925 Hollister Ave.	Renovation and redevelopment of existing golf course: reconfiguration of course layout, demolish existing 8,924 ft^2 clubhouse and build new 27,651 ft^2 clubhouse, and lot split/Pending (inactive but application not withdrawn)

Table 3-3. Relevant Cumulative Projects (continued)

Project Name/Applicant	Description/Status
16. Winnikoff, 260 Storke Road	New 2,232 ft^2 office building/Pending
17. Bacara Resort	62 two- and three-bedroom units/Pending
18. UCSB North Parcel Faculty Housing/UCSB	236 units of faculty housing on the UCSB North Campus, North Parcel/Approved
19. UCSB Sierra Madre Student Housing/UCSB	151 units of family student housing on the UCSB North Campus, Storke-Whittier Parcel/Approved
20. UCSB West Campus Faculty Housing/UCSB	50 units of faculty housing/Anticipated
21. Replacement of the Cliff House at Coal Oil Point/UCSB	Replacement with a structure equivalent in size to all of the existing and formerly existing buildings at Coal Oil Point/Anticipated
22. Various residential projects in the unincorporated area of Goleta	812 residential units/Proposed
23. Various commercial projects in the unincorporated area of Goleta	816,000 ft^2 of commercial space/Proposed
24. Santa Barbara Ranch at Naples/Naples Townsite on both sides of the 101	73 residential units/In Process
25. Morehart Land Company/Naples Townsite south of the 101	8 residential units/Pending
26. Eagle Canyon Ranch/west of Bacara Resort	4 residential units/Pending
27. Las Varas Ranch and Edwards Ranch West of Naples on both sides of the 101.	7 residential units/Pending
28. Dos Pueblos Ranch Estates Residential Development/Between Eagle and Tomate Canyons	2 residential units/Pending
29. Dos Pueblos Naples Residential Development/Naples	10 residential units/Pending
30. Tecolote Canyon/West of Goleta	26 residential units/Pending

Notes: ft^2 = square feet
LNG = liquefied natural gas
m^2 = square meters
NG = natural gas
UCSB = University of California, Santa Barbara

Sources: CSLC 2006a; CSLC 2006b; City of Goleta 2006.



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Cumulative Projects in Central California with Marine Transportation Impacts

FIGURE 3-3

an LNG floating dock carrier berthing system, an LNG subsea transfer system, and construction of a new 36-inch diameter subsea pipeline for transport of natural gas to shore at the Reliant Mandalay Power Generation Station in Oxnard. Pipeline construction will include the installation of a subsea pipeline segment approximately 13.4 miles in length and will tie-in to the existing Southern California Gas Company pipeline infrastructure in an area of existing industrial development and will be limited to a pipeline metering station, odorant injection facility, and if necessary, a nitrogen injection facility. Several local transmission terrestrial tie-in segments required for the project will be constructed by SCGC to upgrade the current infrastructure, which will

include the receiving station, Mandalay to Center Road pipeline, Line 324 Loop, Line 225 Loop, Line 3008 extension, and all related station improvements.

Prior to the start of LNG related operations on Platform Grace, all oil and gas production from the platform will be permanently abandoned/decommissioned; however, Platform Grace would continue to serve as a pipeline pigging station for the pipelines coming from Platform Gail to Platform Grace and from Platform Grace to the onshore Venoco processing plant at Carpinteria. The average anticipated LNG terminal throughput capacity would be at a rate of 1200 MMSCFD, with a peak send out rate of 14000 MMSCFD.

Crystal Energy, Inc. filed a Deepwater Port License application with the United States Coast Guard (USCG) on January 28, 2004 and a Submerged Land Lease Application to the CSLC on February 10, 2004. On July 3, 2006, Clearwater Port, LLC submitted a restated and amended application to the USCG and the CSLC because the project proponent and project description had changed. The proposed Clearwater Port terminal is projected to be operational by 2010.

3. Carpinteria Field Redevelopment Project, Carone Petroleum Corporation and Pacific Operators Offshore Inc.

Carone has applied to the CSLC to develop and produce existing State Oil and Gas Leases PRC 4000, PRC 7911, and PRC 3133 within the Carpinteria Field. Specifically, Carone proposed to drill up to 25 new production or injection wells from Outer Continental Shelf (OCS) Platform Hogan. Oil and gas production from the State Leases would be commingled on Platform Hogan with existing production from the Federal lease and sent via existing pipelines to the La Conchita Facility. After processing, gas would be sold to The Gas Company and oil would be sold to other third parties at the La Conchita sales meters, and shipped via existing pipelines. A draft EIR is currently being prepared by the city of Carpinteria.

4. Paredon Project PRC 3150, Venoco

Venoco applied to the CSLC (application received in February 2005) and to the city of Carpinteria to develop existing State Oil and Gas Lease PRC 3150.1 by conducting extended-reach drilling from an onshore site located within Venoco's existing Carpinteria Oil and Gas Processing Facility, in the city of Carpinteria. Venoco estimates that this project could produce up to 10,000 BOPD of crude oil and 10 MMSCFD of gas. After processing, oil would enter an existing 16-inch diameter pipeline to the ROSF for connection with the existing pipeline system extending to Los Angeles refineries. Processed gas would be delivered via the existing 6-inch diameter pipeline connection

to The Gas Company's existing regional 12-inch diameter pipeline that passes near the Carpinteria Oil and Gas Processing Facility. The application was found complete in October 2005 and a Draft EIR is scheduled for release during the summer of 2007.

5. Ellwood Marine Terminal Lease Extension, Venoco

Venoco is seeking approval from CSLC for a new 10-year State lease (PRC 3904.1) of State-owned sovereign lands. The lease, if granted, would allow Venoco to continue operating the offshore improvements associated with the EMT through February 28, 2013. The proposed Project does not include construction of new facilities or modifications to any existing facility; however, the Draft EIR discusses the potential for increasing crude oil throughput and transportation from current levels to the permitted levels.

6. Full Field Development, Venoco

In August 2005, Venoco submitted an application to the CSLC, Santa Barbara County, and the city of Goleta with a number of project components. The project would include:

- Construction of a new 6-inch diameter, 8.5-mile onshore pipeline to transport oil from the EOF to the AAPL system at Las Flores Canyon;
- Decommissioning and abandonment of the EMT and Line 96. Restoration of the EMT site and discontinuation of marine transportation via barge;
- Adjustment of the existing PRC 3242.1 lease boundary to encompass the eastward section of the South Ellwood Field;
- Adjustment of the existing PRC 3120 lease boundary;
- Drilling of up to 40 new wells in the South Ellwood Field on both the existing leases and the proposed project area;
- Replacement of the existing crane on Platform Holly;
- Replacement of the existing utility pipeline and subsea power cable between the EOF and Platform Holly; and
- Various improvements at the EOF, including a new power generation plant.

Oil production is expected to peak at 12,600 BOPD and gas production at 20 MMSCFD after 5 years. The application was found complete and an EIR is being drafted. Although the schedule for this project is unknown, if the project is implemented, it would result in the decommissioning and abandonment of the EMT since there would be no further need for barging.

7. Return to Production of Platform Grace, Venoco

In 2005, Venoco announced plans to resume oil production at Platform Grace (approximately 29 miles southeast of the EMT). Venoco has not yet filed an application so the details of the project are not known. It is doubtful that returning Platform Grace to production could coexist with the implementation of the Northern Star LNG Terminal (No. 2).

8. Marine Terminal Project, Port of Los Angeles, Pacific Energy Systems

Pacific Energy Systems proposes to construct a crude oil receiving facility on Pier 400 with tanks on Terminal Island, as well as pipelines between berths, tanks, and the pipeline system. There will be 75 additional tanker calls to the Port per year (approximately 5 to 8 per month) with a maximum capacity of approximately 2.5 million barrels per tanker. The tankers will be coming from South America, the Middle East, and Canada and the oil will be processed at Los Angeles area refineries. The EIR/EIS for this project is under preparation.

9. Channel Deepening Project, Port of Los Angeles

This project would deepen the Port of Los Angeles Main Channel to a maximum depth of -55 feet mean lower low water (MLLW). Lesser depths are considered as project alternatives. Approximately 3.9 to 8.5 million cubic yards of sediment would be removed. The sediment would be disposed of at several sites. The EIR/EIS certified for the project identified significant air and noise impacts. This project is approved and construction is underway. A supplemental EIR/EIS addressing additional disposal capacity is currently being prepared.

10. Artificial Reef, San Pedro Breakwater, Port of Los Angeles

This project would develop an artificial reef site south of the San Pedro Breakwater. It would provide an opportunity for the suitable reuse of clean construction materials, and the creation of bottom topography to promote local sport fishing. The Negative Declaration for the project has been adopted, but the project has yet to be completed.

11. John F. Baldwin Navigation Channel Project, San Francisco Bay

The proposed Project involves channel deepening to 35 feet along approximately 16 miles of existing navigational channels extending from north of Angel Island and central San Francisco Bay to the vicinity of Pacheco Creek in Suisun Bay. The purpose of the channel deepening is to provide improved direct access of large oil tankers to the petroleum refineries and terminals adjacent to the Carquinez Strait. This would reduce

vessel-to-vessel lightering of crude oil and reduce tanker traffic in San Francisco Bay. This project is currently in the conceptual phase.

12. Offshore Oil and Gas Leasing

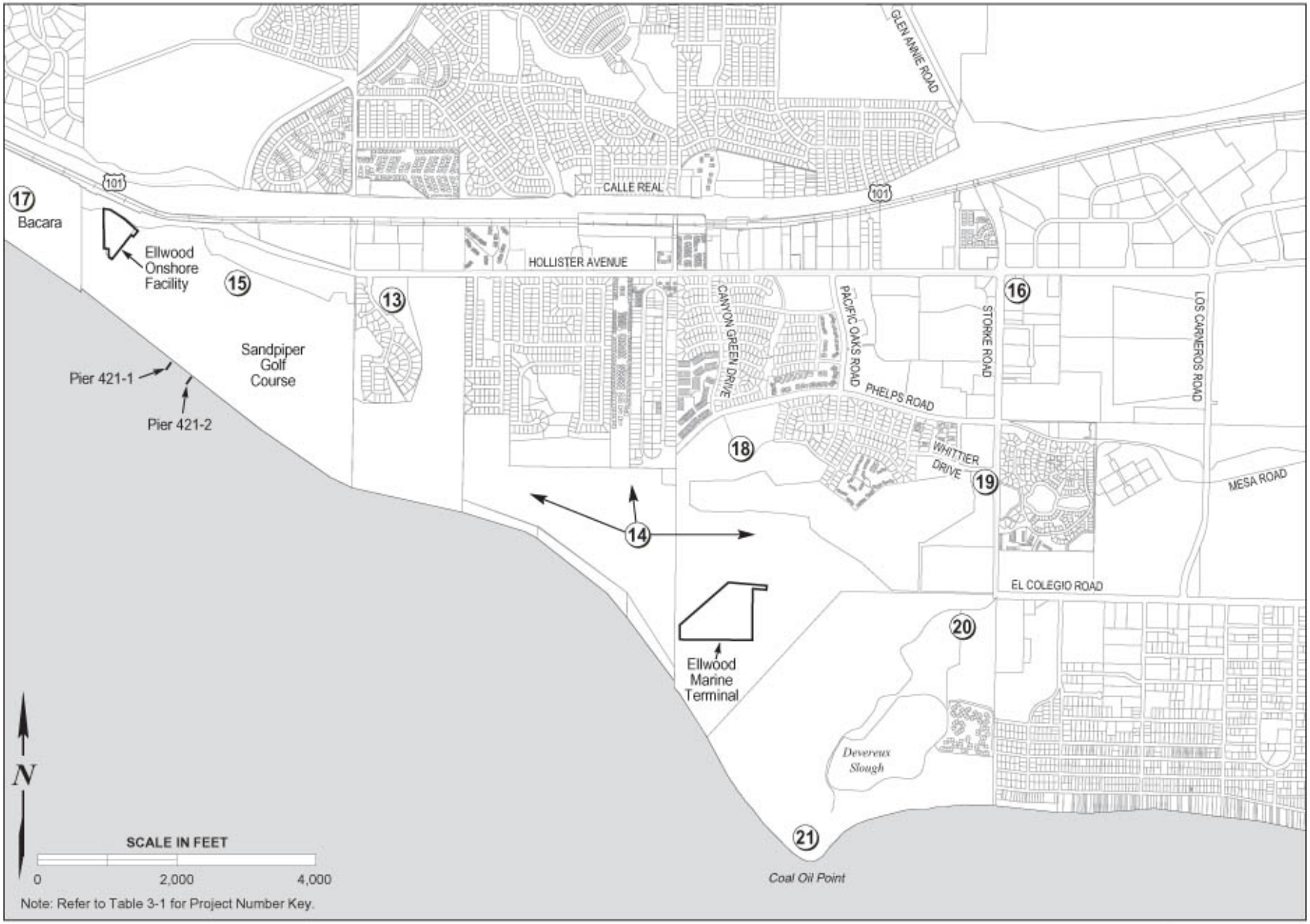
Currently, there are 79 OCS oil and gas leases offshore of Southern California, which include 43 producing leases. Production from these leases is expected to continue for the next 5 to 20 years. The Minerals Management Service (MMS) currently has no proposals for decommissioning offshore facilities.

There are also 36 non-producing leases that were acquired between 1968 and 1982 but were never developed, primarily due to delays by Federal regulators, the State's environmental and safety concerns, increased power to assess the effects of oil drilling, and various lawsuits. In November 2005, a Federal judge ordered the U.S. government to repay $1.1 billion to the oil and gas companies that hold these leases but have been unable to develop them. The oil and gas companies have said that they will give back the leases once they receive the $1.1 billion settlement and additional related costs.

3.4.4 Projects in the Ellwood Area

In addition to projects 5 and 6 described above, which are located in the Ellwood area, a number of residential, institutional, recreational, and commercial projects are proposed in both on and offshore locations in the Ellwood area, near the proposed Project. These projects could directly contribute to cumulative impacts in the Project's primary impact area of both on and offshore areas, and resources within and along the Ellwood Coast. Figure 3-4 indicates the location of the cumulative projects in the immediate Project area. These projects, which are under the jurisdiction of the city of Goleta, Santa Barbara County, UCSB, and the CSLC, are listed by corresponding number in Table 13-3, beginning with 13.

Further, the Santa Barbara County Board of Supervisors approved amendments to oil transportation policies and regulations in October 2004, which would require all oil produced from offshore reserves to be transported by pipeline. The amendments do not apply to onshore producers, and would not affect the current onshore production of Venoco to operate the EMT. Certification of these amendments to the County's Local Coastal Program is pending a Coastal Commission hearing; a date has not been scheduled.



Cumulative Residential, Commercial, Institutional, and Recreational Projects in the Ellwood Area

FIGURE 3-4